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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/024,958	12/18/2001	Melisa Buie	AMA/4213.P1/ETCH/METAL/JB	3439

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APPLIED MATERIALS, INC.  
2881 SCOTT BLVD. M/S 2061  
SANTA CLARA, CA 95050

EXAMINER

CHEN, KIN CHAN

ART UNIT	PAPER NUMBER
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1765

DATE MAILED: 04/07/2005

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**GROUP 1700**

**BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES**

Application Number: 10/024,958  
Filing Date: December 18, 2001  
Appellant(s): BUIE ET AL.

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Keith M. Tackett  
For Appellant

**EXAMINER'S ANSWER**

This is in response to the appeal brief filed October 26, 2004. The previous Examiner's Answer mailed December 2, 2004 is vacated in view of this Examiner's Answer.

**(1) *Real Party in Interest***

A statement identifying the real party in interest is contained in the brief.

**(2) *Related Appeals and Interferences***

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A statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

**(3) Status of Claims**

The statement of the status of the claims contained in the brief is correct.

**(4) Status of Amendments**

The appellant's statement of the status of amendments contained in the brief is correct.

**(5) Summary of Claimed Subject Matter**

The summary of *claimed subject matter* contained in the brief is correct.

**(6) Grounds of Rejection to be Reviewed on Appeal**

The appellant's statement of the *Grounds of Rejection to be Reviewed on Appeal* in the brief is substantially correct. The changes are as follows:

Claims 1-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kornblit et al (US 5,948,570; hereinafter "Kornblit") In view of Meyer et al. (US 4,600,686; hereinafter "Meyer").

**(7) Claims Appealed**

The copy of the appealed claims contained in the Appendix to the brief is correct.

**(8) Prior Art of Record**

5,948,570	KORNBLIT et al.	9-1999
4,600,686	MEYER et al.	7-1986
5,750,290	YASUZATO et al.	5-1998

**(9) Grounds of Rejection**

The following ground(s) of rejection are applicable to the appealed claims:

Claims 1-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kornblit et al (US 5,948,570; hereinafter "Kornblit") In view of Meyer et al. (US 4,600,686; hereinafter "Meyer").

In the method of etching chromium or chromium-containing compound that can be used for reticles, Kornblit (abstract; col. 2, lines 11-20; col. 3, lines 40-50) teaches that the structure may comprise a metal (e.g., chromium or chromium-containing compound) photomask layer formed on a silicon-based substrate and a patterned resist material deposited on the metal photomask layer. Oxygen and chlorine may be used. The power may be delivered to the processing chamber to generate a plasma. The exposed portions of the metal photomask layer may be removed. Kornblit teaches etching process for reticles therefore positioning the reticles on a support member in a processing chamber is expected in order to perform etching process.

Unlike the claimed invention, Kornblit does not teach that carbon monoxide may be used to etch chromium-containing compound. In a method for making photomask of chromium coated glass substrate, Meyer teaches that a processing gas comprising carbon monoxide and the chlorine containing gas may be introduced into the chamber. The carbon monoxide and the chlorine containing gas may have a molar ration between about 1:9 and about 9:1. The power may be delivered to the processing chamber to generate a plasma. The exposed portions of the metal photomask layer may be

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removed. The metal photomask may comprise chromium. The substrate may be a transparent silicon based material (e.g., quartz). The processing gas may comprise oxygen. The processing gas may comprise an inert gas. See Figs. 1 and 2; col. 3, lines 3-25. Meyer teaches that the structure being processed comprises a metal photomask layer formed on a silicon-based substrate and a patterned resist material deposited on the metal photomask layer. Therefore, it would have been obvious to one with ordinary skill in the art that the reticle is included because it is one of the most popular photolithographic tool (photomask) having said structure in the semiconductor device fabrication, see Yasuzato et al. (US 5,750,290) as evidence. Yasuzato et al. (col. 1, lines 21, 27-30) disclose that photomask includes reticle. Hence, it would have been obvious to one with ordinary skill in the art to modify Kornblit by using carbon monoxide as taught by Meyer because each of which is taught by the prior art to be useful for the same purpose of etching chromium coated glass substrate.

" It is prima facie obvious to use two compositions (two methods) each of which is taught by the prior art to be useful for the same purpose. " In re Kerkhoven 205 USPQ 1069 (CCPA 1980). In re Susi 169 USPQ 423, 426 (CCPA 1971). See also Ex parte Quadranti 25 USPQ 2d 1071 (BPAI 1992).

As to dependent claim 6, they are well-known chlorine-containing gases for etching chromium-containing material, see Yasuzato et al. (US 5,750,290; col. 2, lines 13-15). Yasuzato also show similarity (equivalence) of using well-known chlorine-containing gas ( $\text{CCl}_4$ ,  $\text{BCl}_3$ ,  $\text{Cl}_2$ ) to etch chromium.

The use of conventional materials to perform their known functions in a conventional process is obvious. In re Raner 134 USPQ 343.

The above-cited claims differ from Meyer by specifying various compositions (e.g., ratios of the etching gases), processing parameters (such as claims 9, 10, 13, 16-20, 23, and 24). However, They are commonly determined by routine experiment. The process of conducting routine optimizations so as to produce an expected result is obvious to one of ordinary skill in the art. In the absence of showing criticality, it is the examiner's position that a person having ordinary skill in the art at the time of the claimed invention would have found it obvious to modify the prior art by performing routine experiments (by using various compositions and different processing parameters) to obtain optimal result in order to provide their art recognized advantages and produce an expected result. It is noted that appellants did not seasonably traverse, in the subsequent response (January, 23, 2004), the aforementioned conventionality (e.g., well-known features, common knowledge), which have been stated in the office action (October 20, 2003). See MPEP 2144.03.

**(10) Response to Argument**

Appellants have argued that there is no suggestion to combine the references. It is not persuasive. The examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary

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skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). As has been stated in the office action, it would have been obvious to one with ordinary skill in the art to modify Kornblit by using carbon monoxide as taught by Meyer because each of which is taught by the prior art to be useful for the same purpose of etching chromium coated glass substrate. See also the case law cited above.

Furthermore, Kornblit (abstract; col. 2, lines 11-20) teaches that the structure may comprise a metal (e.g., chromium or chromium-containing compound). Oxygen and chlorine may be used to etch chromium. Meyer (col.3, lines 9-12) teaches that a processing gas comprising carbon monoxide and the chlorine containing gas ( $\text{CCl}_4$ ) may be used to etch chromium. Yasuzato (US 5,750,290; col. 2, lines 12-15) shows similarity (equivalence) of using well-known chlorine-containing gas ( $\text{CCl}_4$ ,  $\text{BCl}_3$ ,  $\text{Cl}_2$ ) to etch chromium. Therefore, it would be obvious to one skilled in the art to use chlorine, carbon monoxide, and oxygen to etch chromium with a reasonable expectation of success.

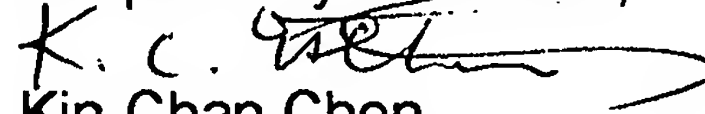
Appellants have argued that the presence of etching gas constituents, ratio of etching gases and process parameters cannot be determined by routine experimentation (Appellants never argued during the previous prosecutions). It is not persuasive. As has been stated above, Appellants do not show the criticality of the ratio of etching gases and process parameters, a person having ordinary skill in the art at the time of the claimed invention would have found it obvious to modify the prior art by performing routine experiments (by using various compositions and different processing

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parameters) to obtain optimal result. Furthermore, appellants did not seasonably traverse, in the subsequent response (January, 23, 2004), the aforementioned conventionality (e.g., well-known features, common knowledge), which has been stated in the office action (October 20, 2003). See MPEP 2144.03.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,



Kin-Chan Chen  
Primary Examiner  
Art Unit 1765

March 29, 2005

Conferees

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